

CLAIMS

1. A chemical mechanical polishing conditioning disk holder comprising:
a circular gimbal plate having a first surface with a centralized
5 elevated region and an opposite second surface for contact
with a conditioning disk;
an overlying gimbal hub attached to the circular gimbal plate and
formed to mate in close contact with the centralized elevated
region to pivot at the centralized elevated region and
10 substantially avoid physical contact with other portions of
the circular gimbal plate;
a flexible disk comprised of a polymer material overlying the
gimbal hub, the flexible disk having the polymer material
radially continuous substantially completely around a central
15 region of the flexible disk to an outside perimeter of the
flexible disk; and
a clamp overlying the flexible disk, the clamp being connected to
the circular gimbal plate for connecting the clamp, the
gimbal hub and the flexible disk in an assembly.
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2. The chemical mechanical polishing conditioning disk holder of claim 1
wherein the polymer material of the flexible disk is polytetrafluoroethylene.
3. The chemical mechanical polishing conditioning disk holder of claim 1
25 wherein the polymer material of the flexible disk is a flexible plastic material.

4. The chemical mechanical polishing conditioning disk holder of claim 1 wherein the clamp further comprises a clamp ring having threaded holes, each for receiving a screw to connect the clamp to the circular gimbal plate.

5 5. The chemical mechanical polishing conditioning disk holder of claim 1 wherein the gimbal hub and the flexible disk further comprise connection holes for permitting connection of the gimbal hub and the flexible disk to a drive mechanism via a connection means.

10 6. The chemical mechanical polishing conditioning disk holder of claim 5 wherein the connection means further comprise a threaded screw in each of connection holes.

15 7. The chemical mechanical polishing conditioning disk holder of claim 5 wherein the circular gimbal plate further comprises a plurality of holes positioned in close proximity to the centralized elevated region, the plurality of holes permitting access to the connection holes of the gimbal hub.

20 8. The chemical mechanical polishing conditioning disk holder of claim 1 wherein the circular gimbal plate further comprises a plurality of pins radially positioned on the first surface, the plurality of pins being aligned to alignment holes in the flexible disk and the clamp to assist in assembly alignment and enhancing fixation of the flexible disk.

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9. The chemical mechanical polishing conditioning disk holder of claim 8 wherein the plurality of pins further comprise one of either a plurality of dowel pins, a plurality of spring pins, a plurality of threaded screws, and a plurality of tapered pins.

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10. The chemical mechanical polishing conditioning disk holder of claim 1 further comprising:

10 a rotating drive shaft connected to the flexible disk and the gimbal hub, the rotating drive shaft being connected to the flexible disk and the gimbal hub via connection holes in the flexible disk and the gimbal hub.

11. The chemical mechanical polishing conditioning disk holder of claim 10 wherein the rotating drive shaft is connected to the flexible disk and the gimbal hub by at least one of screws, pins, studs or bolts.

12. The chemical mechanical polishing conditioning disk holder of claim 10 wherein the flexible disk is thinner at portions where the flexible disk is being clamped by the circular gimbal plate and the clamp than at other portions of the flexible disk.

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13. A chemical mechanical polishing conditioning disk holder comprising:
plate means having a first surface with a centralized elevated
region and an opposite second surface for contact with a
conditioning disk;
- 5 hub means overlying and attached to the plate means at the
centralized elevated region in order to pivot at the
centralized elevated region and substantially avoid physical
contact with other portions of the plate means;
- 10 flexible disk means comprised of a polymer material overlying the
hub means, the flexible disk means having the polymer
material radially continuous substantially completely around
a central region of the flexible disk means to an outside
perimeter of the flexible disk means; and
- 15 clamp means overlying the flexible disk means, the clamp means
being connected to the plate means for connecting the clamp
means, the hub means and the flexible disk means in an
assembly.
14. The chemical mechanical polishing conditioning disk holder means of
20 claim 13 wherein the flexible disk is a disk comprising polytetrafluoroethylene
(PTFE).
15. The chemical mechanical polishing conditioning disk holder of claim 13
further comprising:
- 25 rotating mechanism means connected to the flexible disk means
and the hub means to rotate the assembly.

16. A chemical mechanical polishing holder apparatus, comprising:
a circular planar structure with a rising outer perimeter and an
elevated central region;
5 a gimbal hub tangentially contacting said elevated central region;
a circular elastic element with an outer perimeter and an inner
opening having an inner perimeter, wherein said outer
perimeter of said circular elastic element fixates said outer
perimeter of said circular planar structure to a clamping
10 structure.
17. The chemical mechanical polishing holder apparatus of claim 16
wherein said circular elastic element is polytetrafluoroethylene.
- 15 18. The chemical mechanical polishing holder apparatus of claim 16
wherein said inner opening is substantially centralized within said
circular elastic element.
19. The chemical mechanical polishing holder apparatus of claim 16
20 wherein said circular planar structure is a gimbal plate.
20. The chemical mechanical polishing holder apparatus of claim 16 further
comprising:
a driving mechanism mounted over said circular elastic element
25 wherein said inner perimeter of said circular elastic element
fixates said gimbal hub to said driving mechanism.

21. The chemical mechanical polishing holder apparatus of claim 20 wherein said circular planar structure contains a plurality of holes for accessibility to said driving mechanism.

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22. The chemical mechanical polishing holder apparatus of claim 20 wherein said driving mechanism is a shaft.

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